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Results of Double-Star Measures with the 8-inch Equatorial at Windsor, New South Wales, in 1896.

By John Tebbutt.

Ref. No.	Star.	Observed Mags.	Approx. Place of Star 1896·0. R.A.	Approx. Place of Star 1896·0. Dec. S.	Fraction of Year.	Position Angle.	No. of Obs.	Distance.	No. of Obs.	Mag. Power.	Eyes.	Hour Angles.	Hour Angles.	Weight 1 to 5.
			h m	° ′		°		″				h m	h m	
1	*p* Eridani	...	1 36	56 43	·986	223·3	10	7·63	8	300	P	0 46 W	1 40 W	4
2	"	...	"	"	·988	223·6	10	7·77	6	230	R	2 48 W	3 9 W	3
3	"	6, 6	"	"	·999	223·7	10	7·44	8	300	R	2 41 W	3 11 W	3
4	Lacaille 2145	...	6 2	48 27	·986	33·6	10	1·60	5	300	P	2 37 E	2 1 E	4
5	"	...	"	"	·988	33·0	10	2·11	10	230	P	4 11 E	2 53 E	2
6	"	...	"	"	·988	32·1	10	2·05	7	230	P	4 11 E	2 53 E	3
7	"	...	"	"	·999	32·4	9	...	...	300	P	1 6 E	0 43 E	3
8	V Puppis	...	6 36	48 8	·988	319·3	10	13·20	7	230	R	2 54 E	2 25 E	3
9	γ Piscis Vol.	$4\frac{1}{2}$, 6	7 10	70 20	·323	299·6	10	13·74	7	230	P	2 17 W	2 53 W	4
10	"	4, 6	"	"	·326	299·2	10	13·68	10	230	P	0 26 W	1 1 W	4
11	γ Centauri	...	12 36	48 23	·323	357·8	10	1·87	10	300	P	1 21 E	0 51 E	4
12	"	...	"	"	·326	358·6	10	...	...	300	P	2 43 E	2 0 E	4
13	"	...	"	"	·326	358·6	10	1·62	10	535				

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			h m	° ′		°		″				h m	h m	
14	,,	...	,,	,,	·329	357·4	10	...	...	300	P	2 10 E	1 33 E	5
15	,,	...	,,	,,	·329	357·6	10	1·73	10	535				
16	*β* Muscæ	...	12 40	67 32	·326	336·2	10	1·17	5	535	R	1 43 E	1 8 E	4, 2
17	,,	...	,,	,,	·329	336·5	10	1·32	6	535	R	1 29 E	0 59 E	5, 4
18	*α* Centauri	1, 2	14 33	60 24	·320	208·5	10	21·61	7	300	P	2 40 E	2 10 E	4
19	,,	1, 2	,,	,,	·326	208·5	10	21·36	10	535	P	2 49 E	2 10 E	4
20	A Scorpii	4½, 6½	15 47	25 1	·320	279·7	10	2·88	10	230	P	4 39 E	4 8 E	4
21	,,	4½, 7	,,	,,	·323	279·3	10	...	...	300	P	3 49 E	3 9 E	4
22	,,	4½, 7	,,	,,	·323	280·7	10	2·90	7	300	R			
23	,,	4½, 7	,,	,,	·326	279·0	10	2·70	10	300	R	3 0 E	2 24 E	5

Remarks.

In the column headed "Eyes" P denotes that the line joining the observer's eyes was parallel to that joining the components, and R that these lines were at right angles. The column headed "Hour angles" gives the hour angles between which the measures were made, and that headed "Weight" gives the value of each result on a scale of 1 to 5, 1 denoting the worst and 5 the best possible conditions.

The components of 2, 3, and 13 were noted to be equal. The south component of 4 and 7 was certainly the brighter. The primary of 8 was yellowish, and the companion blue.

Windsor, N.S. Wales : 1897 *April* 30.

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Nebula ♅ I, 43 *Virginis.* By Professor Kavasjee D. Naegamvala.

The nebula was photographed on three successive nights (April 16, 17, and 18, 1896) with exposures ranging from one hour to two hours in the principal focus of a 16½in. reflector of 122 inches focal length.

The nebula is No. 4,594 in the *New General Catalogue*, and is described as "remarkable, very bright, very large, extremely extended, position-angle 92°, very suddenly much brighter in the middle with a nucleus." It is engraved in the *Philosophical Transactions for* 1833, plate xiv. fig. 50, and also in *Mem.R.A.S.* vol. xxxvi. plate v. fig. 22.

Sir John Herschel, in his "Observations of Nebulæ and Clusters of Stars" (*P. T.* 1833), remarks that "there is a faint diffused oval light all about it," and he is "almost positive that there is a dark interval or stratum separating the nucleus and general mass of the nebula from the light above." Mr. Lassell (*Mem.R.A.S.* xxxvi) with his much larger instrument describes it as a "long spindle-shaped nebula, with a dark band through its entire length." He, however, does not seem to have noticed the nucleus.

Of the two drawings, that of Sir J. Herschel much more resembles the photographs. The photograph taken 1896 April 18, distinctly showed that the nebula was *elliptical* with its plane highly inclined to the line of sight. (This plate was unfortunately destroyed during the final washing.) The nucleus is of a starry character, and much more pronounced than in Sir J. Herschel's drawing.

I hope to submit to the Society a photograph of the nebula at an early date.

May, 1897.

The Effect of the General Illumination of the Sky on the Brightness of Field at the Focus of a Telescope. By F. L. O. Wadsworth.

(*Communicated by the Secretaries.*)

The investigations of Lord Rayleigh have shown that the general illumination of the sky is probably due to light scattered by small (*i.e.* small in comparison with the wave-length of light) particles in our atmosphere, and that the intensity of the light so scattered varies inversely as the fourth power of the wave-length. It seems pretty certain that these particles are present in nearly, if not quite as great quantities, in the upper regions of the atmosphere as in the lower strata, and that they consequently cannot